

What is claimed is:

1. A surgical device for passing suture through soft tissue comprising
a first elongate superelastic member having a thermally formed opening therein,
said opening adapted to receive at least one strand of suture.
2. A surgical device for passing suture through soft tissue comprising:
a first elongate superelastic member;
a straightening tube adapted to receive said first superelastic member;
a grasping mechanism operatively associated with said straightening tube
and said superelastic member, said grasping mechanism adapted to temporarily
clamp soft tissue while said superelastic member is advanced through said soft
tissue.
3. A surgical device for passing multiple suture strands through soft tissue
comprising:
more than one elongate superelastic member, each having a thermally
formed opening therein, said opening adapted to receive a strand of suture;
a straightening tube adapted to compress said multiple superelastic
members into a low profile for insertion through a cannulae or trocar;
wherein said superelastic members are adapted to be deployed through
said soft tissue to create penetration sites separated by at least 3 mm.
4. A method for forming a superelastic suture passer having an elongate superelastic
member that defines a proximal end and a distal end, a sharpened tip formed at
said distal end of said superelastic member; and an axial slot cut in said

superelastic member, said axial slot having a length greater than a thickness of said superelastic member, comprising:

inserting an expansion mandrel into the axial slot;

heating the superelastic member to a temperature ranging between 300 and 600 degrees Celsius; and

reducing the temperature of the heated superelastic member to room temperature.

5. A method for passing suture through soft tissue comprising:

inserting a strand of suture through an opening defined in a superelastic member;

compressing said superelastic member with an external means from a first resting configuration into a second, compressed configuration for insertion through a cannulae;

puncturing soft tissue with a distal end of said superelastic member;

advancing said strand of suture through said soft tissue as said superelastic member is deployed from said external means wherein said superelastic member returns towards its resting configuration.

6. A method of rotator cuff repair comprising:

attaching a bone anchor incorporating at least two suture strands to bone;

inserting one suture strand through an opening in a superelastic member;

compressing said superelastic member with an external means from a first, resting configuration to a second, compressed configuration;

puncturing the rotator cuff with said superelastic member;

advancing said suture strand through said rotator cuff by removing said external means wherein said superelastic member returns towards its first, resting configuration;

removing said suture strand from said opening in said superelastic member; and

tying the at least two suture strands into a knot to attach said rotator cuff to said bone.

7. A method of meniscus repair comprising:

inserting a suture strand having a first end and a second end through an opening in a superelastic member;

compressing said superelastic member with an external means from a first, resting configuration to a second, low profile configuration;

puncturing the meniscus at a first side of a tear with said superelastic member;

advancing said first end of said suture strand through said first side;

puncturing the meniscus at a second side of said tear with said superelastic member;

advancing said first end of said suture strand through said second side;

removing said first end of said suture strand from said opening in said superelastic member; and

tying said first end and said second end of said suture strand into a knot.

8. A surgical device for passing suture through soft tissue comprising:

at least one elongate superelastic member having a thickness and having a first resting configuration that defines at least one curve having a first radius of

curvature greater than or equal to 3 times said thickness of said superelastic member;

a thermally formed opening in said superelastic member, said opening adapted to receive at least one strand of suture;

said superelastic member adapted to be straightened into a second configuration having a second radius of curvature larger than said first radius of curvature; and

a sharpened tip on said superelastic member, said sharpened tip adapted to puncture soft tissue and advance said superelastic member through the soft tissue;

9. A surgical device for passing suture through soft tissue comprising:

at least one elongate superelastic member having a thickness and having a first resting configuration that defines a first diameter and at least one curve having a radius of curvature greater than or equal to 3 times a first thickness of said superelastic member;

a thermally formed opening in said superelastic member, said opening adapted to receive at least one strand of suture;

a sharpened tip on said superelastic member, said sharpened tip adapted to puncture soft tissue and advance said superelastic member through the soft tissue; and

at least one straightening mechanism associated with said at least one superelastic member and adapted to compress said superelastic member into a second configuration having a smaller outer diameter than said first diameter.

10. The device of claim 1, wherein said superelastic member comprises a first resting configuration and is adapted to be compressed into a second, stressed

configuration, and returns towards said first resting configuration as a compressive external force is reduced.

11. The device of claim 1, further comprising a straightening tube that incorporates a lumen adapted to compress said superelastic member.

12. The device of claim 1, further comprising at least one straightening tube, and a handle associated with said at least one straightening tube and said superelastic member to advance and retract said superelastic member through said at least one straightening tube.

13. The device of claim 1, further comprising a grasping mechanism adapted to temporarily clamp soft tissue while said superelastic member is advanced through the soft tissue.

14. A surgical device for creating a mattress suture knot to secure soft tissue comprising:

at least two superelastic members, each having a first resting configuration defining a first curve, a thermally formed opening capable of receiving at least one strand of suture, and a sharpened tip adapted to puncture soft tissue; and

at least one straightening mechanism adapted to compress each of said superelastic members into a second configuration defining a second curve having a smaller diameter than said first curve;.

15. The device of claim 14, wherein said superelastic members extend at an angle greater than 0 degrees relative to each other.

16. The device of claim 14, wherein said superelastic members extend at an angle greater than or equal to 90 degrees relative to each

17. The device of claim 14, wherein said superelastic members are separated from each other by at least 5 mm.

18. The device of claim 14, further comprising two straightening tubes adapted to receive and separate said superelastic members, wherein ends of said straightening tubes are radially separated by at least 3 mm such that said superelastic members penetrate soft tissue with a separation of at least 3 mm.

19. The device of claim 14, further comprising two straightening tubes adapted to receive and separate said superelastic members, wherein ends of said straightening tubes are axially separated by at least 3 mm such that said superelastic members penetrate soft tissue with a separation of at least 3 mm.

20. The device of claim 14, further comprising a grasping mechanism adapted to temporarily clamp soft tissue while said superelastic members are advanced through the soft tissue.

21. The device of claim 14, wherein said thermally formed opening is dimensioned to allow at least one suture strand to pass therethrough.

22. The device of claim 14, wherein said thermally formed opening defines a crochet hook capable of engaging at least one suture strand.

23. A surgical device for arthroscopic rotator cuff repair comprising:

at least one superelastic member having a first resting configuration that defines a first curve with a radius of curvature greater than or equal to 3 times a diameter of said superelastic member, a thermally formed opening in said superelastic member, said opening adapted to pass at least one suture strand, and a sharpened tip adapted to puncture through a tendon;

at least one straightening mechanism adapted to compress said superelastic member into a second stressed configuration that defines a curve with a radius of curvature greater than 2 times a radius of curvature for said first resting configuration; and

an actuation mechanism associated with said superelastic member and said straightening mechanism, wherein said actuation mechanism is adapted to advance and retract said superelastic member relative to said straightening mechanism.